



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/656,777	09/07/2000	Junji Kuyama	09793822-0409	1570

26263 7590 02/21/2002

SONNENSCHN NATH & ROSENTHAL
P.O. BOX 061080
WACKER DRIVE STATION
CHICAGO, IL 60606-1080

EXAMINER

WILLS, MONIQUE M

ART UNIT	PAPER NUMBER
----------	--------------

1745

DATE MAILED: 02/21/2002

2

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/656,777

Applicant(s)

KUYAMA ET AL

Examiner

Wills M Monique

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 September 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Art Unit: 1745

DETAILED ACTION

Priority

Foreign priority document(s) Japan P11-254589 filed September 8, 1999 submitted under 35 U.S.C. 119(a)-(d), has/have been received and placed of record in the file.

Claim Objections

Claims 1-9 are objected to because of the following informalities: BET method is not defined. Appropriate correction is required.

The Examiner recognizes that this is a term of art used to describe a specific method of measuring the specific surfaces of particles. However, a definition should be provided in the specification to further clarify the term. There is concern that said method could be employed in different ways.

Claim 2 is objected to because of the following informalities: "1,4" should be "1.4", and "ore" should be "or". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "predetermined composition" is of uncertain meaning, rendering the claim vague and indefinite. Appropriate correction is required.

The term "molded with pressure" is of uncertain meaning, rendering the claim vague and indefinite.

Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The parenthesis render the claim indefinite as it is unclear if the parameters are included.

Claim Rejections - 35 USC § 102

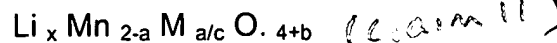
The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4, 6 & 8-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyasaka U.S. Patent 5,869,208.

Miyasaka teaches In a lithium ion secondary battery having a positive electrode, negative electrode, a non-aqueous electrolyte, and a container, the positive electrode is made of a positive electrode active material having a spinel structure and the formula:



wherein M is cation of a metal other than Li and Mn; x, a and b are

Art Unit: 1745

$0.1 < x \leq 1.2$, $0 \leq a < 2.0$ (preferably $0 < a < 2.0$), $1 \leq c \leq 3$, and $0 \leq b < 0.3$, during its charge-discharge cycle (see abstract). The positive electrode active material (or its precursor) and the negative electrode active material (or its precursor) preferably are in the form of particles having a mean diameter of 0.03 to 50 μ , more preferably 0.1 to 20 μ . See column 8, lines 20-25. The positive electrode active material or its precursor preferably has a specific surface area of 1 to 10 m^2/g . See column 8, lines 25-31. The specific surface area is measured using the BET method (col. 11, lines 10-15). The electrolyte solution comprises a non-protonic organic solvent and a lithium salt (namely, electrolyte) soluble in the solvent. Examples of the organic solvents include propylene carbonate, ethylene carbonate, butylene carbonate, dimethyl carbonate, diethyl carbonate, gamma-butyrolactone, 1,2-dimethoxyethane, tetrahydrofuran, 2-methyltetrahydrofuran, dimethyl sulfoxide, 1,3-dioxolane, formamide, dimethyl formamide, dioxolane, acetonitrile, nitromethane, methyl formate, methyl acetate, phosphoric triester, trimethoxymethane, dioxolane derivatives, sulforane, 3-methyl-2-oxazolidinone, propylene carbonate derivatives, tetrahydrofuran derivatives, diethyl ether, and 1,3-propane sultone. ^{claim 2} These solvents can be employed singly or in combination. Examples of the lithium salts include LiClO_4 , LiBF_6 , LiPF_6 , LiCF_3SO_3 , LiCF_3CO_2 , LiASF_6 , LiSbF_6 , $\text{LiB}_{10}\text{Cl}_{10}$, lithium salts of lower aliphatic carboxylic acids, LiAlCl_4 , LiCl , LiBr , LiI , chloroborane lithium, and lithium tetraphenylborate. ^{claim 2} These lithium salts can be employed singly or in combination. See column 9, lines 1-30. Therefore, the reference anticipated the subject invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyasaka U.S. Patent 5,869,208 as applied to claim 4 above, and further in view of Nakajima et al. U.S. Patent 6,337,158.

Miyasaka teaches a lithium secondary battery described above, further comprising a lithium anodic material.

The reference is silent to a carbonaceous anode of the group provided said claim.

However, Nakajima teaches that coke and organic baked substances are equivalent to metallic lithium and lithium alloy materials for negative electrodes in secondary lithium cells (col. 2, lines 59-65).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to employ the carbonaceous materials of Nakajima in place of the lithium anode of Miyasaka because, the secondary reference teaches that they are equivalent in similar electrochemical environments.

Claim Interpretation

Claim 3 will be interpreted as making a cathode by mixing a lithium oxide with a second material, mole said mixture and sinter at a temperature between 600 to 900°C.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claim 3 is rejected under 35 U.S.C. 102(a) as being anticipated by Sugeno et al.
U.S. Patent 6,083,646.

More particularly, in the first processing step, the mixture of the manganese source and the lithium source is crushed and mixed. Then, the mixture in a powder state, which may have been subjected to compression molding, is further subjected to a thermal treatment in an air atmosphere under a temperature of 450° C. or below. Subsequently, in the second processing step, the thermally-treated material, i.e., a sintered body is cooled down to a room temperature and again crushed and mixed. The mixture in a powder state, which may have been subjected to compression molding, is further subjected to a thermal treatment in an air atmosphere under a temperature of 650 to 780° C. Therefore, the reference anticipates the instant claim based on the extent that it is understood.

Art Unit: 1745

Conclusions

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kelder U.S. Patent 5,948,565 teaches a cathodic material for lithium batteries. Kanai U.S. Patent 6,103,422 teaches a cathodic lithium magnesium oxide for secondary batteries. Ein-Eli et al. U.S. Patent 5,962,166 teaches ultrahigh voltage mixed valence materials. Iwata et al. U.S. Patent 6,168,888 teaches a spinel-type lithium manganese oxide containing heteroelements. Manev et al. U.S. Patent 6,267,943 teaches a spinel-type lithium manganese oxide. Inoue et al. U.S. Patent 6,325,988 teaches a process for preparing a spinel-type lithium manganese oxide.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is (703) 305-0073. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Gabrielle Brouillette, may be reached at 703-308-0756.

Application/Control Number: 09/656,777


Page 8

Art Unit: 1745

The unofficial fax number is (703) 305-3599. The Official fax number for non-final amendments is 703-872-9310. The Official fax number for after final amendments is 703-872-9311.

Mw

02/13/02


GABRIELLE BROUILLETTE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700